

II. REMARKS

As the applicants pointed out before, the energy of the photons in the laser beam of Burnham's method is suitable only to raise the temperature of a structure by between 25 and 50 degrees centigrade. Clearly the technique in Burnham envisages the heating of the whole semiconductor structure to within a few tens of degrees centigrade below the thermal disordering temperature and then providing additional heat by means of a laser beam, a method which is utterly different from the technique of the present invention.

The Examiner equates a source of microwave frequency radiation (an electron cyclotron resonance device) with a device capable of producing photons of energies of at least that of the displacement energy (E_d). It is clearly stated in the specification that a typical value of the displacement energy would be of the order of a few electron volts (see particularly page 9). By contrast, the photon energy of microwaves would be somewhere between $1,000^{\text{th}}$ and $1,000,000^{\text{th}}$ of an electron volt.

The Thompson ECR device is a source of charged helium particles used in conjunction with the GSMBE method in the growth of a first defect layer; by contrast, the ECR device in the present invention is source of high energy (VUV) photons. Furthermore, it is clear that the use of a helium plasma source to induce slow diffusing vacancy defects in a first InP layer 112 would not produce a defect layer that led to a bandgap shift. The bandgap shift in the Thompson technique is contributed by a further InP defect layer 102, which is grown as a separate layer on top of this first defect layer 112. If the ECR helium plasma exposed

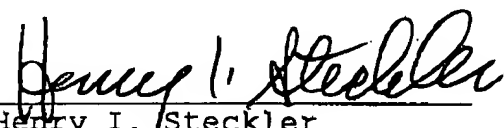
defect layer 112 were also contributing defects for quantum well intermixing, there would then be no need to provide this second InP defect layer 102.

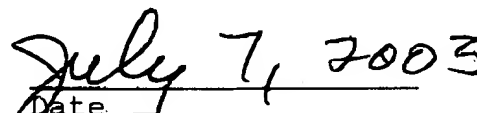
Claim 1 recites "... a source of photons to generate defects, the photons having an energy (E) at least that of the displacement energy (E_D) of at least one element ...". These features are totally missing from any single reference, or even when the references are taken in combination.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,


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